UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,952	01/25/2001	Gregory Donoho	LEX-0118-USA	5907

24231 7590 12/10/2003

LEXICON GENETICS INCORPORATED
8800 TECHNOLOGY FOREST PLACE
THE WOODLANDS, TX 77381-1160

EXAMINER	
STEADMAN, DAVID J	
ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 12/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/769,952	DONOHO ET AL.	
	Examiner	Art Unit	
	David J Steadman	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a)☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Status of the Application

[1] Claims 1-3 and 5-7 are pending in the application.

[2] Applicants' amendment filed August 21, 2003, is acknowledged. This amendment replaces all previous versions and listings of the claims in the instant application.

[3] Applicants' amendment to the title of the specification in the amendment filed August 21, 2003, is acknowledged.

[4] Applicants' arguments filed August 21, 2003 have been fully considered and are deemed to be persuasive to overcome some of the rejections and/or objections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.

[5] The text of those sections of Title 35 U.S. Code not included in the instant action can be found in a prior Office action.

Claim Rejections - 35 USC § 101

[6] The utility rejection of claims 1-3 and 5-7 under 35 USC § 101 is maintained for the reasons of record as set forth in item 11 of the Office action mailed May 16, 2003 and for the reasons stated below. Applicants' arguments addressing the instant rejection begin at page 5 of the response. Applicants argue that because the polypeptide encoded by SEQ ID NO:1 has been annotated as a nitrilase polypeptide by an unaffiliated third party, there can be no question that one would believe SEQ ID NO:2 is a human nitrilase protein. Applicants argue that one would recognize the usefulness of the claimed nucleic acid as the protein encoded thereby allegedly interacts with a known tumor suppressor and allegedly has a role in cancer. Applicants' argument is not found persuasive.

Applicants' arguments appear to address the issue of credibility of an asserted utility. However, the credibility of asserted utility is not at issue – instead it is the examiner's position that the specification provides no specific and substantial asserted utility for the claimed invention. It should be emphasized that the specification does not assign a function to the polypeptide of SEQ ID NO:2 and provides no disclosure that SEQ ID NO:1 has a role in cancer or that SEQ ID NO:2 interacts with a tumor suppressor

as asserted by applicants (applicants are invited to demonstrate evidence that the specification asserts SEQ ID NO:2 has nitrilase function). Instead, the specification merely indicates that SEQ ID NO:2 shares an undisclosed level of structural similarity to nitrilase proteins from other organisms – this not an assertion of function and, as such, the examiner has not interpreted this statement as such. Even assuming the specification asserts SEQ ID NO:2 has nitrilase activity – which it does not – it is noted that the substrate and cell biology of nitrilases remain to be determined as evidenced by Pace et al. (*Genome Biol* 2:reviews0001.1-0001.9) as stated in a previous Office action. Furthermore, regarding the reference of Pace et al. (*Curr Biol* 10:907-917), who assign the function of a nitrilase to a polypeptide identical to SEQ ID NO:2 and allegedly teach that Nit2 interacts with a tumor suppressor, it is noted that this reference was not available to one of ordinary skill in the art at the time of the invention. Even if Pace et al. (*Curr Biol* 10:907-917) were available at the time of the invention, this reference merely speculates that human Nit interacts with the tumor suppressor Fhit (see page 914, right column) – thus further experimentation would have been required to confirm such a hypothesis. Even assuming *arguendo* that the specification disclosed or it was well-established that SEQ ID NO:2 interacts with a known tumor suppressor, this disclosure alone – without further experimentation – is insufficient to establish a utility for the claimed invention.

At the top of page 6 of the response, applicants argue that, given the likely involvement of the claimed sequence in cancer, one example of utility is tracking expression of the claimed sequences using DNA chips. Applicants argue that since the sequences are specific markers of chromosome 3 and such markers are targets for the discovery of drugs associated with human disease, a skilled artisan would recognize the claimed sequences would be an "ideal, novel candidate" for use in gene expression analysis with DNA chips. Applicants argue that due to the widespread utility of gene chips using public domain gene information, there can be little doubt that the claimed sequences would have utility in DNA chip applications. Applicants argue that compositions that enhance the utility of such DNA chips must themselves be useful. Applicant's argument is not found persuasive.

As noted above, there is no evidence in the specification that indicates that SEQ ID NO:1 or SEQ ID NO:2 are involved in cancer. In fact, there is no evidence of record or line of reasoning to indicate that,

at the time of filing, the claimed sequences were involved in *any* disease. Regarding the asserted utility of the claimed sequences in gene expression monitoring using gene chips, it is noted that any sequence can be included as a component of a gene chip – this utility is not specific to the claimed sequences and instead applies to the general class of nucleic acids as evidence by applicants' own statement regarding the widespread use of such gene chips using public domain gene sequences. It is also noted that the claims are drawn to polynucleotide sequences – not to the physical DNA chip itself or methods of use thereof. Furthermore, any information derived from gene expression analysis using the claimed sequences would be meaningless as the specification fails to provide guidance for interpreting any result obtained thereby.

Beginning at the middle of page 6 of the response, applicants argue that evidence of "real world" substantial utility, is further provided by the fact that there is an entire industry established based on the use of gene sequences in DNA chip format. Applicants argue that the use of gene sequences is a "real world" substantial, widespread and well-established utility. Applicants argue that the utility of genomic data, and specifically human genomic data is well recognized and cite Venter et al. and Jasny et al. as allegedly supporting their argument. Applicant's argument is not found persuasive.

Evidence of commercial success, while sometimes persuasive as secondary evidence of non-obviousness, is immaterial to utility and enablement. Many products have enjoyed commercial success due to fads or clever advertising, wherein the products would not have met the legal standards for utility under 35 USC § 101. In this case, there is no dispute as to the potential usefulness of information obtained from the sequencing of the human genome. However this information is valuable to the extent that it provides a starting point for scientists to further investigate the biological significance of the genetic information collected. In the absence of any information as to the interpretation of a result obtained by gene expression analysis using a DNA chip, the claimed sequences are useful only for further experimentation to investigate their biological significance. As such, the asserted utility of gene expression analysis is not a substantial utility. It should be noted that the issue at hand is the utility of the claimed sequences and not DNA chips or methods of use thereof. In the instant case, applicants have failed to demonstrate a patentable utility for the claimed invention.

Beginning at the top of page 7 of the response, applicants argue the examiner's assertion that the use of sequences in gene expression monitoring is flawed in two respects: 1) only expressed sequences can be used to track gene expression and 2) applicants reiterate their argument that the examiner has confused the requirements for a specific utility with a unique utility. Applicant's argument is not found persuasive.

The asserted utility of using the claimed sequences is neither specific nor substantial. *Any* expressed or non-expressed sequence can be used for gene expression monitoring – this utility is not specific. In this case the information provided by gene expression analysis is meaningless (as described in detail above) as the specification fails to provide any guidance as to how one would interpret data obtained from such an analysis. Regarding a unique utility, applicants mischaracterize the examiner's position as applicants have been required to identify a utility that is specific to the invention claimed, as opposed to one that would apply regardless of the specific properties of the claimed invention. An invention certainly can have a utility that is shared by other compounds or compositions. On the other hand, not every utility will satisfy 35 USC § 101, even if the utility is shared by a class of inventions. So while a utility need not be unique to a claimed invention, it must nonetheless be specific, and in currently available form, in order to satisfy § 101. Here, applicants assert that the claimed polynucleotides can be used in gene expression analysis. However, as stated above, any results obtained thereby would have no meaning without additional experimentation.

At the top of page 8 of the response, applicants argue the claimed invention has a specific utility in identifying coding sequence and chromosomal mapping. In applicants' opinion, the claimed sequences provide exquisite specificity in localizing the specific region of human chromosome 3 and that this specificity is useful because it is allegedly shared by virtually no other sequences. Applicant's argument is not found persuasive.

Any expressed human polynucleotide, *e.g.,* a cDNA, can be used to detect a particular locus of the corresponding gene, therefore *any* human polynucleotide which encodes a protein can be used to determine the specific chromosome which contains that locus. Regarding identification of a *specific* region of human chromosome 3 using the claimed sequences, it is noted that, at the time of filing of the

instant application, there was no evidence of record or line of reasoning to suggest that the claimed sequences were useful for identifying any specific region of chromosome 3 or that the region comprising the claimed sequences was shared by virtually any other nucleic acids. Based on the specification, this would have required further experimentation and thus, this utility would not be substantial. In regard to the use of the claimed polynucleotides in producing a genetic map of high resolution, it is noted that this use is not specific since many other expressed polynucleotides as indicated above can be used in a similar way. In this case, the asserted utilities are applicable to the broad class of nucleic acids sequences.

At the bottom of page 8 of the response, applicants argue that since only a minor portion of the genome contains exons, the claimed polynucleotides provide biologically validated empirical data that specifically define that portion of the genomic locus that actually contains an exon. Applicants further argue that the claimed polynucleotides define how exons are spliced to produce an active transcript. Applicants argue that since their polynucleotides define biologically validated empirical data, the present claims meet the requirements of 35 USC §101. Applicants reiterate their argument that the examiner has confused the requirements for a specific utility with a unique utility. Applicants' arguments are not found persuasive.

As previously stated, the asserted utilities are not specific to the claimed invention as all expressed polynucleotides have such utilities. Such utilities do not meet the specific and substantial requirements of 35 USC § 101. Regarding a unique utility, as previously stated, applicants mischaracterize the examiner's position as applicants have been required to identify a utility that is specific to the invention claimed, as opposed to one that would apply regardless of the specific properties of the claimed invention. An invention certainly can have a utility that is shared by other compounds or compositions. On the other hand, not every utility will satisfy 35 USC § 101, even if the utility is shared by a class of inventions. So while a utility need not be unique to a claimed invention, it must nonetheless be specific, and in currently available form, in order to satisfy § 101. Here, applicants assert that the claimed polynucleotides can be used in gene expression analysis. However, as stated above, any results obtained thereby would have no meaning without additional experimentation.

At the middle of page 9 of the response, applicants argue that a statement of utility must be accepted absent reasons to doubt the objective truth of such a statement. Applicants argue that the Federal Circuit in *Juicy Whip Inc. v. Orange Bang, Inc.* has stated that the threshold of utility is not high and that an invention is useful under § 101 if it is capable of providing some identifiable benefit. Applicants further cite *Brooktree Corp. v. Advanced Micro Devices, Inc.* to indicate that the Federal Circuit has stated that a claimed device must be totally incapable of achieving a useful result to lack utility under 35 USC § 101. Applicants cite *Cross v. Iizuka* in support of their argument that any utility for a claimed invention is sufficient to satisfy the requirements of 35 USC § 101 and indicate that the Federal Circuit has confirmed that anything "under the sun" made by man is patentable in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*

Again, applicants' arguments appear to address the issue of credibility of an asserted utility. However, the examiner has not questioned the credibility of applicants' asserted use of the claimed polynucleotides. Instead, based on the information provided in the specification, it is the examiner's position that the specification provides no specific and substantial asserted utility for the claimed invention. It is noted that only *Cross v. Iizuka* is considered relevant to the instant discussion since the inventions in that case are chemical compounds. In *Juicy Whip Inc. v. Orange Bang, Inc.,* the issue of utility was discussed in regard to a juice dispenser, in *Brooktree Corp. v. Advanced Micro Devices, Inc.,* the issue of utility was discussed in regard to digital analog conversion circuitry, and in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.,* the issue of utility was discussed in regard to a business method. Even assuming *arguendo* that all cited cases are relevant here, the claimed invention does not benefit the public in currently available form and therefore, does not satisfy the requirements of 35 USC § 101. As stated above, the claimed invention has no specific and substantial utility as the asserted utilities are applicable to the broad class of polynucleotides and/or require further experimentation to identify a "real world" use. It should be noted that in *Cross v Iizuka*, the specification disclosed the structure of the claimed imidazole derivative compounds and the specification provided experimental evidence of inhibition of thromboxane synthetase inhibition by these imidazole derivatives in human and bovine microsomes and a method for practicing such. In the instant case, the specification fails to provide

guidance for practicing any patentable utility of the claimed sequences. Thus, in contrast to *Cross v Iizuka,* the claimed invention fails to benefit the public in currently available form.

Beginning at the top of page 10 of the response, applicants argue that even if further research is required, this does not preclude a finding that the invention has patentable utility and cite *In re Brana* as allegedly supporting their argument. Applicants argue the need for some experimentation does not render the invention unpatentable and that a considerable amount of experimentation may be permissible if routine. Applicants argue that absent evidence, one of ordinary skill in the art would understand the claimed invention has patentable utility. Applicant's argument is not found persuasive.

As previously stated, further experimentation is required to establish a "real world" use for the claimed polynucleotides. In *In re Brana,* the claimed invention was shown to have patentable utility based on evidence provided in the specification demonstrating *in vitro* anticancer activity of the claimed compound. The court found the claimed invention to have patentable utility based on the asserted "antitumor activity". The claimed invention had patentable utility in its currently available form without further experimentation. The court's statement regarding "the expectation of further research and development" was directed to Phase II experiments to confirm antitumor activity *in a human,* however, it should be noted that no further experimentation was required to confirm the use of the claimed invention for *in vitro* antitumor activity, i.e., the claimed invention was useful in a currently available form without need for further experimentation.

At the top of page 11 of the response, applicants indicate that the requirements set forth in the Office action for compliance with 35 USC § 101 do not comply with the requirements set forth by the PTO itself for complying with 35 USC § 101. Applicants state that, while they are aware of the new utility guidelines set forth by the USPTO, the current rules and regulations are the patent laws set forth in 35 USC and the rules set forth in 37 CFR but not the MPEP or guidelines set forth by the USPTO. Applicants argue it is the job of the judiciary and not the USPTO to interpret these laws and rules. Applicants argue that they are unaware of recent changes in either 35 USC § 101 or in the interpretation of 35 USC § 101 by the Supreme Court or the Federal Circuit which support the new utility guidelines set forth by the USPTO. Applicants cite patents that allegedly do not contain examples of the "real world"

utilities allegedly required by the Examiner. Applicants argue that holding them to a different standard of utility would be arbitrary and capricious.

Applicants are respectfully reminded that the examiner must examine a patent application according to the guidelines set forth by the USPTO as well as the MPEP, since the examiner has no authority to disregard such guidelines or to apply his own interpretation of patent law in the examination of the application. Furthermore, as set forth in the guidelines and the MPEP, the guidelines were promulgated by the PTO in accordance with all applicable case law and thus are believed to be consistent therewith. While the examiner acknowledges the cited US patents, each patent application is examined on its own merits according to the current guidelines of examination as set forth by the USPTO and a discussion on the utility of any polynucleotide claimed in such patents would require a detailed review of the record of each individual case, which would be improper. Finally, applicants are further reminded that the examiner has no authority to comment in regard to the legality of the current utility guidelines or the MPEP as set forth by the USPTO.

Claim Rejections - 35 USC § 112, Second Paragraph

[7] In view of applicants' amendment to claims 1 and 2, the rejection under 35 U.S.C. § 112, second paragraph, as set forth in item 12 of the Office action mailed May 16, 2003, is withdrawn.

Claim Rejections - 35 USC § 112, First Paragraph

[8] The enablement rejection of claims 1-3 and 5-7 under 35 U.S.C. 112, first paragraph, is maintained for the reasons of record as set forth in item 14 of the Office action mailed May 16, 2003 and the reasons stated below. Applicants' arguments addressing the instant rejection are on page 13 of the response. Applicants argue the claimed invention has a specific, substantial, and credible utility and refer to their arguments addressing the utility rejection. It is the examiner's position that the claimed sequences do not have a specific and substantial utility or a well-established utility for the reasons set forth in the rejection under 35 USC § 101 above. Applicants' arguments traversing the instant rejection have been fully addressed above.

Claim Rejections - 35 USC § 102

[9] In view of applicants' amendment to claim 1, the rejection under 35 USC § 102(a) as set forth in item 12 of the Office action mailed May 16, 2003 is withdrawn.

Conclusion

[10] Status of the claims:

- Claims 1-3 and 5-7 are pending.
- Claims 1-3 and 5-7 are rejected.
- No claim is in condition for allowance.

THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Steadman, whose telephone number is (703) 308-3934. The Examiner can normally be reached Monday-Friday from 7:00 am to 5:00 pm. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (703) 308-3804. The FAX number for submission of official papers to Group 1600 is (703) 308-4242. Draft or informal FAX communications should be directed to (703) 746-5078. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Art Unit receptionist whose telephone number is (703) 308-0196.

David J. Steadman, Ph.D.
Patent Examiner
Art Unit 1652